41 ~~63~~ ~~54.~~ (newly-added) The apparatus of Claim ~~53~~ 40 ~~62~~ further comprising a check valve means operatively connected to said irrigation fluid conduit means at a location between the connection of said pressure equalizing conduit and said irrigation fluid conduit means, and the surgical site for preventing at least some of the irrigation liquid from flowing in said irrigation fluid conduit means towards the source of irrigation liquid when said liquid pressure equalizing means is admitting the irrigation liquid into said aspiration fluid conduit means.

~~55.~~ 64 (newly-added) The apparatus of Claim ~~21~~ wherein said pump control signal causes said controllable pump means to quickly shut off when the vacuum in said aspiration fluid conduit means exceeds a predetermined value.

56. (newly-added) The apparatus of Claim 22 wherein said pump control signal causes said controllable pump means to quickly shut off when the vacuum in said aspiration fluid conduit means exceeds a predetermined value.

Remarks

In the above-mentioned Office Action the Examiner indicated that there was no Claim 40. Claim 40 was added though on page 3 of the Supplemental Amendment dated April 28, 1987. To wit, "40. (newly-added) The apparatus of Claim 39 wherein said preventing means comprises a check valve operatively positioned in said irrigation fluid conduit means."

Accordingly, the renumbering of Claims 41-57 should be withdrawn.

Also, the indefiniteness rejection of Claim 41 (renumbered as 40) should be withdrawn as there is a Claim 40

from which it can depend and there is an antecedent for "said check valve."

In the Action, Claims 9-20, 27-33, 48-56 were allowed, Claims 21, 22, 34, 37-43 and 45-47 rejected and Claim 44 objected to. The rejected claims consist of independent Claims 21, 34 and 44, each of which has been amended herein.

Applicant acknowledges with appreciation the Examiner's allowance of Claims 9-20, 27-33 and 48-56, and these claims remain in the application.

Applicant also acknowledges with appreciation the Examiner's indication that dependent Claim 45 (44) was allowable. It has been rewritten in independent form as new Claim 49.

In rejecting Claim 21 as being unpatentable over Banko '342 the Examiner stated "[w]hen the pump is not operating, the control signal is considered to be directly proportional to the vacuum in the aspiration conduit means." (emphasis added). Claim 21 has been amended to stress that the pump control signal can be generated when the pump (the controllable pump means) is pumping. This is not taught by the references nor has the Examiner contended that it is taught. Applicant further respectfully submits that the pump control signal from the output of the Banko '342 transducer 60 is strictly proportional only to the rate of flow through the aspiration fluid conduit, and not proportional to the vacuum in the aspiration fluid conduit, as is claimed. This is affirmed by Banko at column 3, lines 47-49, and column 4, lines 1-3 and 19-21.

New dependent Claims 55 and 56 point out that the pump control signal shuts the pump off when the vacuum in the aspiration fluid conduit means becomes too great.

In rejecting Claim 34 over Kelman in view of Douvas the Examiner stated that Douvas shows "the use of liquid such as 36

which is tied into the aspiration line 26" to equalize the pressure in the aspiration line. Claim 34 though distinctly calls for the "liquid pressure equalizing means" to admit irrigation liquid from the source of irrigation liquid. It is noted that the irrigation liquid conducted by the irrigation fluid conduit means to the surgical site comes from this same source.

In direct contrast, Douvas while using a liquid to equalize pressure does not use irrigation liquid from the source of irrigation fluid with which the irrigation fluid conduit means is in fluid communication. Rather, Douvas introduces liquid from a distinct and separate source (the "back flow source").

Claim 44 (43) was rejected over Kelman in view of Douvas and further in view of Banko '342. However, the Examiner did not point out where Applicant's "releasing means" (now "transducer releasing means") is taught. This releasing means (as amended) causes "the introduction of a venting liquid having the same pressure as that of the irrigation fluid in said irrigation fluid conduit means into said aspiration fluid conduit means." Thus, Applicant's apparatus simply releases the pressure in the aspiration line to equilibrium to relieve the occlusion. Unlike the Douvas system, it does not back-flush to thereby drive venting liquid into the eye to release the occluding tissue at the cutting tip.

Additionally, Douvas uses a venting liquid at a different pressure from that of the irrigation liquid. This is apparent from Column 7, lines 49-68, of the Douvas patent. "Intermediate infusion pressure" is utilized for venting, and "high" and "continuous" infusion pressures are the actual vehicles of infusion, dependent on the aspiration rate. Thus, the vent liquid pressure of Douvas does not correspond to the irrigation pressure(s).

By using only venting liquid of this constant positive pressure, backflow into the eye or into the venting liquid source is resisted by Applicant's apparatus.

The venting in Banko, in contrast, does not bring the entire system to equilibrium. In Banko the aspirate is driven back into the eye, which is an undesirable result, due to the "higher-than-infusion" pressure from the separate surge bottle source of venting liquid (column 3, lines 27-30).

It is requested that the Examiner make his consideration of the documents submitted with Applicant's Information Disclosure Statement of June 10, 1987 formally of record with his next Action.

It is thus respectfully submitted that the application is now in condition for allowance and indication of such at an early date is requested.

Respectfully submitted,

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